Effect of Feed Based on Corn and Rice Bran during Finisher Period on Broiler Feed Consumption, Body Weight and Financial Analysis

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ABSTRACT

Corn and rice bran are the main ingredients to manufacture of poultry feed, but it can not be used singly, must be mixed with other ingredients. The purpose of this assessment were to determine the effect of feeding based on corn and rice bran during finisher period to feed consumption, body weight and broiler farm financial analysis. The study conducted until broiler age 35 days. The study was conducted by using a completely randomized design, with 4 treatment groups and 5 replicates. The treatments were P1 (control) = commercial feed 40% + corn 34.7% + rice bran 25%, + minerals 0.3%, P2 = commercial feed 35% + corn 54.7% + rice bran 15%, + minerals 0.3%, P3 = commercial feed 30% + corn 49.7% + rice bran 20%, + minerals 0.3%, and P4 = commercial feed 25 % + corn 49.7% + rice bran 25%, + minerals 0.3%. As a supplement boosters given Vitachik during starter period and Neobro during finisher period through drinking water. Disease prevention was done by vaccination Newcasttle Disease (ND) techner B1 strain, given 2 times at age of 4 days and 21 days via eye drops. The results showed feed intake in P1, P2, P3 and P4 were 3.39, 1.52, 1.38 and 1.32, respectively. Body weights were 1.95, 1.52, 1.38 and 1.32, respectively. Gains were P1 Rp. 282,416,- with R / C ratio 1.80, P2 Rp. 165,284,- with R / C ratio 1.50, P3 Rp. 154,322,- with R / C ratio 1.52 and P4 Rp. 147,319, - the R / C ratio 147,319. It is concluded that feeding with commercial concentrate 30% and 35% in this study coul replace with corn and rice bran.

Keywords: corn, rice bran, feed consumption, body weight, financial analysis.

INTRODUCTION

Chicken feed is a mixture of raw materials of animal origin and plants as well as waste coupled with vitamins, minerals and antibiotics as needed type of chicken to be able to produce optimally, it is generally known that the concentrations of commercial traded on the market at a price which is relatively expensive. It is one of the causes less interest to cultivate poultry broiler chickens, efforts to reduce costs, especially in feed to be mixed in concentrate with a commercial feed ingredient relatively easier and lower economic value than concentrates such as corn, bran and other ingredients.

Feed consumed by poultry decisive weight gain and therefore contributes to the efficiency of a farm. Terms feed consumed must be of good quality feed which contains substances that fit the needs of poultry. Feed consumption in livestock are affected by environmental temperature, chicken health, housing, the materials used for the feed, the content of nutrients in the feed and stress that occur in poultry that (Widodo, 2009). Corn is the main ingredient used in the processing of animal feed, especially materials for poultry feed. Corn is a plant that is almost entirely be utilized by cattle, but cattle broilers can only utilize just by milling corn kernels in advance (Anonymous, 2014). Increased corn production for 4 years from 2005 to 2009 amounted to 11.58% from 12 million tons to 19.44 million tons (Yulistiani *at al*., 2012). Statistical data of Bengkulu province (Bengkulu in Figures, 2013) that the production of corn 3 years back from the year 2010 to 2013 was 74331-103770 tons, it had increased by 29.439 tons, an increase in crop yields of corn in Bengkulu annually was exported to neighboring provinces.

For most farmers in Indonesia using corn as an animal feed ingredient. Even in some rural areas, corn is also used as the main feed ingredients. Typically, corn mixed together with other feed ingredients such as bran, shorgum, forage, and fish meal, feed made from corn is generally given to chickens, ducks and quail (Tangendjaja and Vienna, 2009). The chemical composition of the corn moisture content of 12%, 8.7% protein, 3.8% fat, 2.2% crude fiber, 0.02% calcium, phosphorus 0.28%, energy metabolism 3350 kcal. Suarni and Widowati (2007) stated that the value of the nutrients contained in the feed corn based on the dry weight is 3.7% protein, 1.0% fat, 86.7% crude fiber, 0.8%

ash, 71.3% starch and sugar 0.34%. This condition caused the corn can't be used singly as animal feed broilers.

Henry (2003) explains that the use of rice bran in animal feed mixes fowl especially broiler should be restricted because it contains coarse fibers that relatively high at 7.5%, mostly fowl unable to digest coarse fiber of more than 4%, rice bran nutrient content moisture content of 11. 5%, 13.0% protein, 4.9% fat, 7.5% crude fiber, 7.0% ash, 1630 kcal energy metabolism. This is in line with the opinion of AAK (1987), explains that the chemical composition of the water content of rice bran 11.7%, 10.1% protein, 4.9% fat, crude fiber 15.3%, 0.08% calcium, phosphorus 1.36%, and 1270 kcal energy metabolism.

The purpose of this assessment was conducted to determine the effect of feeding based on corn and rice bran finisher period on feed consumption, body weight and financial analysis of poultry up to the age of 35 days of harvest.

MATERIALS AND METHODS

The research was conducted in the stable, chicken complex BPTP Bengkulu for 2 months, materials research using 100 broiler chickens strains Hubbard without separated sexes with age starter period of 15 days, animals were divided into 4 treatments, each treatment be repeated as many 5 times, experimental design used was completely randomized design (CRD).

Concentrate feed commercial granted up to the age of 15 days (period starter) given to each treatment in ad libitum, while the age of 16 days up to the age of 35 days (period finisher) given concentrate feed in accordance with the treatment is (PI) control = concentrate commercial 40% + 34.7% + corn bran 25%, + 0.3% minerals. (P2) = 35% commercial concentrate + corn bran 54.7% + 15%, + 0.3% minerals. (P3) = 30% commercial concentrate + corn bran 49.7% + 20%, + 0.3% minerals. and (P4) = 25% commercial concentrate + corn bran 49.7% + 25%, + 0.3% minerals. As a supplement to the amplifier body is given Vitachik period Neobro the starter and finisher periods through drinking water. Disease prevention was done by vaccination Newcasttle Disease (ND), which was given 2 times that at the age of 4 days and 21 days using ND vaccine strain Tchner B1 through eye drops.

Each treatment enclosure measuring 1.25 meters x 3.1 meters and height of 0.45 meters consisted of 4 units, which fill 25 DOC tail was divided into 5 replications, to determine the replications of each treatment, the animal was given colored paint on the feet that red for a retrial to 2, black for a retrial to 3, white for a retrial to 4 and green colors for a retrial to 5 while the P1 (control) leg is not colored. The DOC initial weight average of 0.035 kg / head. Commercial concentrate feed was given two times a day during the period that morning and afternoon starter. Entering the finisher period at 16 days, in accordance with the treatment given feed 2 times a day is morning and afternoon while drinking water provided ad libitum.

To know the weight then the weight gain (PBBH) the initial period of starter taken in each treatment is by weighing in the first week, then weighing carried out in the period finisher at the age of 15 days, 21 days, 28 days and weighing day 35 (harvest). While to know feed intake, feed weighing is done first before giving, as well as food remains are still there every day. The difference of the feed given to the rest of the remaining consumption values obtained. Each of the date obtained were analyzed statistically, significantly different if the analysis results then tested further by using Tukey test at the level of 95% (Gomes and Gomes, 1995).

The economic value of the use of feed each treatment, calculated from the results of subtraction between total revenues and total business expenses in cash out flows. Financial analysis calculated with the return cost ratio (R/C), the ratio between the total revenues and expenses.

RESULTS AND DISCUSSION

Feed Consumption in Finisher Phase

Feeding the starter period (before the age of 16 days) is a commercial concentrate with 21% crude protein, while feeding the finisher period is feed blend accordance with the treatmentat at the age of 16-35 days. Results of the study showed that the consumption of feed at each treatment period starter and finisher periods shown in Table 1.

Table1. Feed consumption of each treatment

Treatment	Feed Consumption (kg)
P1 (control)	3,39[d]
P2	3,06[c]
P3	2,54[b]
P4	2,39[a]

Superscript followed by different letters in the same column, means showed significantly different (P<0.05).

Feeding the finisher period, according to treatment by lowering concentrations of 5% respectively in each treatment were replaced with corn and bran concentrate causing declining consumption (Table 1). The declines in a row were P1; P2 = 0.33 kg / head, P2; P3 = 0.52 kg / head and P3; P4 = 0.15 kg / head, respectively. Based on a statistical analysis finisher treatment period showed that the feed intake was significantly different (P <0.05). This is caused by the influence of material concentrates in consumption at each different treatment, the more the addition of the corn and rice bran feed consumption will decrease, when compared with controls P1, decreased feed consumption in this study each of P2, P3 and P4 were 0.33 kg / head, 0.85 kg / head and 1.00 kg / head. The big difference of ration consumption in chickens, is generally determined by the palatability of the ration. Rations with high palatability will consume more and vice versa (Scahaible, 1979). Further described by Appleby *et al.* (1992) that what determines the palatability of chicken rations including the smell and taste of the ration. Judging from the composition of the diet in this study showed that the ration P1 most commercial concentrate rations are preferable to others.

Consumption of feed to get good results, then during refeeding period, broilers should have the opportunity to eat more to catch up growth. During this period the use of feed by broiler is more efficient, so that the cumulative feed efficiency becomes better. Haryati and Supriyati, (2010) reported the results of his research that the feed consumption is the highest in the last week (period finisher) cattle raising broilers with the addition of 0.2% soybean meal to feed and provide the same body weight gain. Feed consumption in the period finisher per head of each treatment was 3.21 kg / head: 3.04 kg / head,: 2.78 kg / head, and 2.34 kg / head. This is according to research conducted by Vienna *et a.l* (2010) who started giving treatment seed meal feed distance in detoxification by fermentation treatments ranging from the age of 21 days and feed treatment is given for 14 days. A study done by Haryati *et al*. (2006) reported that the power consumption of livestock feed in broiler chickens which received commercial feed plus coconut cake fermentation with *A. niger* 10% at age finisher (4 weeks), significant effect compared without giving fermented coconut cake.

Body weight

Day old Chicen (DOC) broiler body weight starter each treatment period in this study the average was 0.035kg/head (W0). Weighing after ending a period of 15 days of age showed starter numbers P1, P2, P3 and P4 respectively is 0.55 kg; 0.55 kg; 0.53 and 0.53 kg of body weight was statistically not significantly different (P>0.05) in each treatment, this is caused by the feed that is given at the same starter period is a commercial concentrate with 21% protein. While the results of the weighing chickens at age21 days, 28 days and 35 days of age can be seen in Table 2 below.

Table2. Body weight in each treatment

Treatment	Body Weight (kg)				
	W_0	W_{15}	W_{21}	W_{28}	W_{35}
P1 (control)	0.035 a	0.55 a	1.05 b	1.65 a	1.95 b
P2	0.035 a	0.55 a	0.95 ab	1.45 b	1.52 a
P3	0.035 a	0.53 a	0.93 a	1.33 c	1.38 a
P4	0.035 a	0.53 a	0.89 a	1.17 d	1.32 a

W_0=Weight of the start /DOC W_{15}=Weighing 15 after starter W_{21}=Weighing 21days
W_{28}=Weighing 28days W_{35}= Weighing 35days
The figures followed by the same letter are not significantly different (P>0.05).

Weighing Results on day 21 (W21) each treatment increased body weight compared with P1 (control) of P2 = 0.10 kg / head, P3 = 0:12 kg / head and P4 = 0.16 kg / head. Based on statistical

analysis that P1 (control) was not significantly different (P> 0.05) compared to P2. While P1 significantly different (P <0.05) compared to P3 and P4, this is caused by a reduction percentage concentrates on P2 is not very big (5%) of the control while the concentrate sizable reduction in P3 and P4 at 10% and 15% compared to control treatment. Daliani et al (2012) Explaining that the provision of rice bran up to 35% and maize 25% did not significantly affect body weight when given in broiler chickens with 19 % protein concentrate.

Hardini (2004) reported the results of his research that the Broiler during the period of the starter the first week who grew up with chicken Merawang, obtained by the average weight is 44.83 grams, while chicken Merawang 32 grams, when viewed his behavior then Broiler with body weight greater looks calmer, but both types of animal body weight fluctuates up to the age of 6 weeks due to the nature and behavior of each animal. Weighing results day 28 (W28) of each treatment was 1.65 kg / head; 1:45 kg / head; 1:33 kg / head and 1:17 kg / head, statistically each treatment was significantly different (P <0.05), the highest increase from day 21 to day 28 is the P1 (control) is 0.6 kg / head caused by consumption of commercial concentrate feed to the feed material that is better than the other treatments, so the nutrients in consumption is also better than the other treatments.

Weighing day 35 (W35), average body weight of each very volatile compared to P1 (control) is 1.95; 1.52; 1.38 and 1:32 kg / head, from day 28 to 35, the highest body weight gain in P1 (control) was 0.3 kg / head, P2 : 0:07 kg / head, followed by P3: 0.05 kg / tail while the body weight gain in P4 : 0.15 kg / head. The highest body weight gain of the last period of the last starter to finisher also occur P1 (control) is 1.4 kg / head. Based on the statistical analysis of the results of each treatment on w35 showed significantly different results (P <0.05) in each treatment Table 2, each treatment showed that the rate of increase of body weight development is not the same, therefore raising chickens in the period finisher, factors feed material type and determine the amount of body weight of broiler chickens in the period finisher. Widodo (2009) explains that the body weight gain is associated with the feed, both the quantity and quality of feed. In terms of quantity related to feed intake feed intake which if disturbed it will automatically interfere with the growth as well.

Financial analysis

Based on the results of the financial analysis (Table 3), profitability and R / C each treatment is P1; P2; P3 and P4 each is Rp. 282 416 with R / C 1.80; Rp. 165 284 with R / C 1.50; Rp. 154 322 with R / C 1.52 and R. 147 319 with R / C of 1.52. Figures showed the benefits of each treatment appears that P1 (control), showed greater benefits compared with other treatments. It was followed by P2, gain greater profits compared with P3 and P4 but the R / C ts much lower compared with P3 and P4. The consumption of feed on P2 was greater than P3 and P4. Murtidjo (1992) explains that the main factors that lead to low business efficiency farming broiler chickens is the high price of commercial feed, because the cost of feed in broiler industry occupies 60-70% of total production costs. Also described by Astuti *et al*. (2013) reported that a farm is said to be efficient if the return cost ratio (R / C) of more than 1. The larger the value of R / C, the more efficient the business and the larger scale of business it will the higher the value of the benefits.

Table3. Financial analysis of each treatment

Description		treatment1 /cont		treatment2		treatment3		treatment 4	
		kg	Rp	kg	Rp	kg	Rp	kg	Rp
Input									
DOC @ Rp 4.000/ekor		25	100,000	25	100,000	25	100,000	25	100,000
Starter feed	Consentrate @ Rp 3.000/kg	12	36,000	11.95	35,850	11.85	35,550	11.8	35,400
Finisher	Consentrat @ Rp 2.700/kg	33.88	101,640	26.74	80,220	19.02	57,060	14.95	44,850
	Refined corn @ Rp 1.800/kg	33.63	60,534	37.97	68,346	31.51	56,718	29.72	53,496
	Brand rice @ 1.200/kg	16.94	25,410	11.46	17,190	12.68	19,020	14.95	2,425
	Mineral @ Rp 32.000/kg	0.25	8,000	0.23	7,360	0.19	6,080	0.18	5,760
Supplement	Vitachik @ 40.000/kg	0.15		0.15		0.15		0.15	

Amplifier			6,000		6,000		6,000		6,000
	Neobro @ 35.000/kg	0.25	8,750	0.25	8,750	0.25	8,750	0.25	8,750
Drug	Vaksin ND or 100 ekor Rp 20.000		5,000		5,000		5,000		5,000
Total expenditure			351,334		328,716		294,178		281,681
Revenue									
Final body weight silver back x25 x Rp 13.000		1.95	633,750	1.52	494,000	1.38	448,500	1.32	429,000
Profit									
Revenue - Operating costs			282,416		165,284		154,322		147,319
R/C			1.80		1.50		1.52		1.52

CONCLUSION

Feed consumption of broiler chickens at the end of the finisher phase were significantly different (P <0.05) in each treatment it is caused by the palatability of each different ration, while the body weight gain at the end of P1 treatment were significantly different with other treatments but among the three other treatments (P2, P3 and P4) were not different significantly. Based on the financial analysis carried out showed that the treatment P1 generates the highest profit of Rp. 282 416, -R /C of 1.80, the lowest and advantage is the P4 treatment of Rp.147 319, -R /C of 1.52.

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